CLAIMS:

1.   A method of predicting a first color of a gemstone to be cut, to have a first geometry, from an uncut gemstone having a second color and a second geometry including:

5   (i)   determining an absorption coefficient of the uncut gemstone's material based on said second color and second geometry of the uncut gemstone, using calculations relating to behavior of light in said uncut gemstone; and

(ii)   deducing said first color of the cut gemstone based on the absorption

10   coefficient determined in step (i), and on said first geometry, using calculations relating to the behavior of light in said cut gemstone.

2.   A method according to Claim 1, wherein said first and second colors are defined by transmittance.

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3.   A method according to Claim 1 or 2, wherein said second geometry is obtained by generating a measured map of the uncut gemstone and said first geometry is obtained by generating a calculated map of the cut gemstone.

20   4.   A method according to any one of Claims 1 to 3, wherein said first geometry is chosen from among a range of possible proposed geometries.

5.   A method according to Claim 4, further including:

-       defining criteria for an optimal first geometry from said range based on said

25   first color; and

-       choosing the first geometry from said range based on said criteria.

6.   A method according to any one of Claims 1 to 5, wherein said second geometry is obtained using a laser gemstone-mapping device.

7.   A method according to any one of Claims 1 to 6, wherein said second color is obtained by using a spectral measurement device.

8.   A method according to Claim 7, wherein said spectral measuring device is a colorimeter.

9.   A method according to any one of Claims 1 to 8, performed by a processor.

10.   A method according to any one of Claims 1-9, wherein said deduced first color is provided as a grade in accordance with a predetermined scale.

11.   A carrier including a program for performing the method of any one of Claims 1-10.

12.   A gemstone color prediction system for predicting a first color of a gemstone to be cut, to have a first geometry, from an uncut gemstone having a second color and a second geometry, the system comprising:

          (a)   a gemstone-mapping device for measuring said second geometry of the uncut gemstone;

          (b)   a spectral measurement device for measuring said second color of the uncut gemstone; and

          (c)   a processor adapted to determine an absorption coefficient of the uncut gemstone's material based on data from said gemstone-mapping and said spectral measurement devices, and on calculations relating to behavior of light in said uncut gemstone, the processor being further

adapted to deduce said first color based on said first geometry, the deduced coefficient and calculations relating to behavior of light in said cut gemstone.

13.   A gemstone color prediction system according to Claim 12, wherein said first and second colors are defined by transmittance.

14.   A gemstone color prediction system according to Claim 12 or 13, wherein said processor is further adapted to obtain said first geometry generating a calculated map of the cut gemstone.

15.   A gemstone color prediction system according to any one of Claims 12 to 14, wherein said processor is further adapted to provide a range of possible proposed geometries from which said first geometry is chosen.

16.   A gemstone color prediction system according to Claim 15, wherein the processor is further adapted to provide an optimal first geometry for choosing from said range in accordance with defined criteria based on said first color.

17.   A gemstone color prediction system according to any one of Claims 12 to 15, wherein the processor is further adapted to provide the deduced first color as a grade in accordance with a predetermined scale.

18.   A gemstone color prediction system according to any one of Claims 12 to 17, wherein said gemstone-mapping device is adapted to map using a laser.

19.   A gemstone color prediction system according to Claim 18, wherein said gemstone-mapping device is a Sarin DiaExpert™.

20.   A gemstone color prediction system according to Claim 18, wherein the processor utilizes one of the following programs: DiaExpert™, DiaMension™.

21.   A method of deducing an absorption coefficient for an object having a geometry and color including:

(i)   measuring said geometry of the object;

(ii)   measuring said color of the object; and

(iii)   deducing the absorption coefficient, based on the data from the preceding steps and calculations relating to behavior of light in said object.

22.   A method according to Claim 21, wherein said color is defined by transmittance.

23.   A method according to Claim 21 or 22, wherein said geometry is obtained by generating a map of the object.

24.   A method according to any one of Claims 21 to 23, wherein said second geometry is obtained using a laser gemstone-mapping device.

25.   A method according to any one of Claims 21 to 23, wherein said second color is obtained by using a spectral measurement device.

26.   A method according to Claim 25, wherein said spectral measuring device is a colorimeter.

27.   A method according to Claim any one of Claims 21 to 23, wherein said step (iii) is performed by a processor.

28.   A carrier including a program for performing the method of any one of Claims 21-27.

29.   A system adapted to perform the method according to any of Claims 21-27.